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FACT SHEET: NASA Astrobiology Program

Astrobiology is the study of the origin, evolution, distribution, and future of life in the universe. This multidisciplinary field encompasses the search for habitable environments in our Solar System and habitable planets outside our Solar System, the search for evidence of prebiotic chemistry and life on Mars and other bodies in our Solar System, laboratory and field research into the origins and early evolution of life on Earth, and studies of the potential for life to adapt to challenges on Earth and in space.

NASA's Astrobiology Program addresses three fundamental questions: How does life begin and evolve? Is there life beyond Earth and, if so, how can we detect it? What is the future of life on Earth and in the universe? In striving to answer these questions and improve understanding of biological, planetary, and cosmic phenomena and relationships among them, experts in astronomy and astrophysics, Earth and planetary sciences, microbiology and evolutionary biology, interstellar chemistry, and other relevant disciplines are participating in astrobiology research and helping to advance the enterprise of space exploration.

The Astrobiology Program has four elements: the NASA Astrobiology Institute, Exobiology and Evolutionary Biology, Astrobiology Science and Technology for Exploring Planets, and Astrobiology Science and Technology Instrument Development. NASA established the Astrobiology Program in 1996. However, NASA studies in the field of exobiology – a predecessor to astrobiology – date back to the beginning of the U.S. space program.

NASA funded its first exobiology project in 1959 and established an Exobiology Program in 1960. NASA's Viking missions to Mars, launched in 1976, included three biology experiments designed to look for possible signs of life. In the 21st century, astrobiology is a focus of a growing number of NASA solar system exploration missions. As noted above, exobiology research is now an element of the Astrobiology Program.

Astrobiology is a cross-cutting theme in all of NASA's space science endeavors, knitting together research in astrophysics, earth science, and heliophysics as well as planetary science. NASA's Astrobiology Roadmap, prepared in consultation with the scientific community, outlines multiple pathways for research and exploration and indicates how they might be prioritized and coordinated. The Astrobiology Program also solicits advice from the Space Studies Board of the National Research Council (see publications page).

The Astrobiology Program is managed by the Planetary Science Division of the Science Mission Directorate at NASA Headquarters. It is closely coordinated with NASA's Mars Exploration and Planetary Protection Programs.

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